

# Sentence external elements in Catalan\*

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## Abstract

This paper deals with the intonation of sentence external elements in Catalan. Its main purpose is to investigate the claim that there is a correspondence between prosodic form and grammatical function, so that syntactic independence is paralleled by prosodic independency. A related goal is to identify the mechanisms for signalling prosodic independency and/or dependency. To that end, a production experiment was devised eliciting the same sentences in different pitch ranges. The conclusion is that sentence external elements do not constitute a uniform category, either syntactically or prosodically. Quotation attributions are nearly always deaccented, appositions and non-restrictive relatives copy the pattern of the main phrase in a lower voice, some parentheticals are produced in a lower pitch range, while sentence adverbs do not show any tonal subordination at all.

**Key words:** syntax, intonation, sentence external elements, tags, tonal subordination.

## 1. Introduction

Sentence external elements are series of elements like vocatives (*Mary, your meal is ready*), direct speech markers (*Your meal is ready, she said*), dislocated phrases (*It's ready, your meal*), certain adverbs like «frankly» or «sincerely» (*I don't believe you, frankly*), appositions (*Anna, the cook, baked the cake*), parenthesis (*Your dinner, as we agreed, is ready*), non-restrictive relative sentences (*Anna's friends, who are loyal, supported her*), etc. They have been called parenthesis, *contour flat*, D-contour, tags, tag sentences, incises, sentence external elements, or *constituents externs*. Different terminology reflects theoretical differences and hence underlying assumptions about what those elements have in common.

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The terms «tag» or «tag sentence» point at the autosegmental-metrical tradition (henceforth AM). Those are the names chosen by Liberman (1975), Pierrehumbert (1980, Pierrehumbert & Hirschberg 1994, Beckman & Pierrehumbert 1986, and elsewhere), and Ladd (1980, 1996, and elsewhere). Pierrehumbert and Ladd pursue different strands of AM, differing mainly in the views about the status of the nucleus, the existence of post-nuclear accents and the possibility of compound tunes. However, none of the versions have succeeded so far in providing a convincing account of the complex issues of phrasing, tune and prominence that interact in some cases, as for instance, when we find a deaccented tag which is set off by prosodic boundaries, or when an accented one reduplicates the pattern of the main phrase.

The terms «parenthesis», «contour plat» (Delattre 1972, Martin 1987, Wunderli 1987) and «D-contour» (Bing 1984) denote a phonologically-oriented approach which consists mainly in identifying a distinctive contour – in this case a monotone with an optional final rise – elaborating a complete phonological description – and only later drawing generalizations about grammatical form and meaning. This proves to be difficult as there is not necessarily a one to one correspondence between intonational patterns and grammatical functions. The same function can be fulfilled by different contours, and the same contour can correspond to different functions.

«Sentence external elements», or «*constituents externs*», in Catalan (Bonet 1984, Recasens 1993, Prieto 2002), reflect the assumption that *the syntactic structure of those elements determines their prosodic form*. Syntactically, they are assumed to be adjoined to the highest node in the phrase structure, S. In this sense, they are «external» to the phrase, and for this reason they form independent tonal units, marked by pauses, tonal boundaries or pre-boundary lengthening. This syntactically-oriented approach is by far the prevailing view (Cooper & Paccia-Cooper 1980, Cruttenden 1986, Nespor & Vogel 1986, Nespor 1993). Its main problem is that not all external elements are indisputably attached to S, the highest node in the structure, and hence external to the phrase. For instance, relatives and appositions are attached to the Noun Phrase they complement, not to S (but see Truckenbrodt 1995:26). Parenthesis are commonly analysed as «floating elements», not attached to any level of the syntactic structure. Furthermore, the analysis needs to take into consideration the differences between restrictive and non-restrictive relatives.

Jackendoff's X-bar grammar provides a finer grained analysis of these problems, which will be useful for our phonological analysis. Very briefly, Jackendoff's theory of phrase structure postulates a semantic interpretation of generative syntax (e.g. Jackendoff 1972, 1977). It is based on the Uniform Three-level hypothesis saying that for every lexical category X, there are syntactic categories X', X'', and X'''. They form a hierarchical structure where X, the lexical category, is the head of the phrase. There are 4 major lexical categories: Verb (V), Noun (N), Adjective (A), and Preposition (P), each with its own set of complements. X' complements take the semantic role of functional arguments; X'' complements that of restrictive modifiers; and lastly, X''' function as non-restrictive modifiers.

Our «sentence external elements»<sup>1</sup> would be X''' complements, attached to V, N, A or P. Unlike X'' complements, which add extra truth conditions to the assertion of the sentence, restricting thus its extension, X''' complements add no conditions, just some sort of auxiliary assertion. For this reason they are called non-restrictive modifiers. When X''' elements occur at the end of the sentence, they are set off by «comma intonation». V''' complements are sentence adverbials (*frankly, truthfully...*), sentential appositives, parentheticals (*John is a fink, I think*) and various other subordinate clauses. Thus, a parenthetical like *John, I think, is a fink* would be semantically and syntactically equivalent to a sentential or speaker-oriented adverb: e.g. *John, truthfully, is a fink* (1972: 95-100). N''' would be appositions, and non-restrictive or appositive relative clauses. In contrast, restrictive relatives would be N'', that is restrictive complements. Appositives like: *You may have heard of my brother, known as a notorious womaniser* or *She presented Picasso, then in his blue period, with a blueberry pie*, might be interpreted as reduced non-restrictive relative clauses (1977: 4).

However, there is no reference at all to vocatives and quotation-markers —possibly because they are considered as something completely outside the phrase, something that can be assimilated to a metalinguistic comment, of the sort discussed for instance in Brown & Yule (1983: 16, 132-133). Brown & Yule, though, do not allude specifically to those structures. Their definition of metalinguistic comment is something by means of which the speaker/writer specifically comments on how what he is saying is to be taken. I would argue that this concept can be extended to include as well «something by means of which the speaker/writer comments on how what someone else said is to be taken or re-enacted». In this way quotation-attributions can fit into this description.

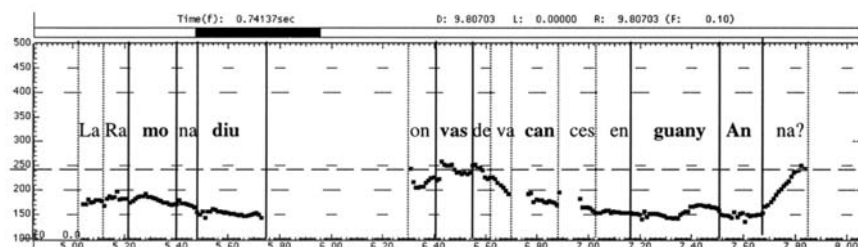
## 2. Main problems in the analysis of tags

There are two peculiarities of tags that have not been properly accounted for by any approach so far. One is the intonational difference between initial and medial/final elements. The other is the co-occurrence of prosodic boundaries and lack of accentuation in some cases.

### 2.1. Asymmetry in the behaviour of initial versus final elements

There is a difference in the behaviour of initial versus medial and final elements. We can see this in the following example, the sentence, *La Ramona diu: on vas de vacances enguany, Anna?* 'Ramona says 'where are you going on holidays, Anna?'<sup>2</sup> (Figure 1):

1. Through this paper I will be using equivalently the terms «sentence external elements» (henceforth SEE), as is the most common, especially in Catalan, and «tag», as is shorter.
2. In the figure, stressed syllables appear in boldface, accented syllables are marked by solid lines, and unstressed syllables by a dotted line.



**Figure 1.** F0 contour of the utterance *La Ramona diu: on vas de vacances en guany, Anna?*

The first clause is the quotation-marker *La Ramona diu*, ('Ramona says'). This element forms an independent tonal phrase, with an ordinary declarative contour, and is separated by a clear pause from the question «Where are you going on holidays, Anna?».

In general we can say that initial elements, like the quotation-marker in example 1, form independent tonal units, get an independent tonal contour, separated by clear pauses, and show a tendency to have a final rise (although not in this case). Non-initial elements, like the vocative «Anna», may form independent phrases, which can be separated by pauses, phrase accents or mere lengthening. In the example at hand, though, we find that post-sentential vocative and main phrase form a single intonational contour, an interrogative one. This is characterized by a rapid fall from the initial peak, on the verb, to the nucleus, which is low, and a steep final rise. The vocative is separated from the main phrase by a tonal boundary, this upward movement on the last syllable of *enGUANY*. This is by large the most usual case when the vocative occurs after a question, regardless of whether there is a situation of potential tonal clash (as in the example) or not. More rarely, there is a pause and the vocative bears a rising or falling interrogative contour, not necessarily coincident with the one in the main phrase.

As we will see, even if the tag does not belong to the same unit that the main phrase, it depends intonationally on it. This dependency can be manifested in different ways (reduplicating the contour in the main phrase, with reductions in pitch span leading to total deaccenting, using a much lower voice volume, and/or using an overall lower pitch level). My argument would be that the ways of signalling tonal subordination vary greatly according to the type of element, at least in Catalan.

## 2.2. Phrasing and accentuation

Another problem is deciding whether the tag has accents and whether it forms a single tonal unit with the main phrase. For instance, in Bing's, Gussenhoven's and Ladd's early work, we find a flat, deaccented stretch of speech, set apart by pauses (Bing 1984:13, Ladd 1980: 164-165). On the other hand, Pierrehumbert's early version of AM allowed neither intonational units without accents, nor accented

items after the nucleus in the same intonational phrase (Pierrehumbert 1980: 293-298). Consequently, in spite of the accentuation of some vocatives and the substantial pre-boundary lengthening in some other cases, she considered them as deaccented and hence as belonging to the same unit as the main phrase.

Cruttenden says that sentence adverbs constitute two tonal groups, because they are accented, even if no boundary is present, while vocatives and quotation clauses consist of one group only, whether pause is present or not, on the grounds that there is no pitch accent in the vocative or quotation (Cruttenden 1986: 37). Prieto, like Bonet and Recasens, takes sentence and tag as two separate units, and hence by implication accented. Nonetheless, there are repeated allusions to reduced level, low tone, and occasional lack of prominence, especially noticeable in the case of dislocations (Bonet 1984: 31, 90).

### 3. Aims of the study and methodology

The broad research question is whether sentence external elements are prosodically independent, that is, if they constitute indeed separate tonal units as has been claimed. The main objective of the experiment is to assess the degree of interdependence of host sentence and tag. Therefore, the experiment was designed to decide whether tags:

1. constitute separate tonal units
2. are accented or not
3. behave similarly regardless of their type

To answer the research questions a methodology was devised based on eliciting differences in pitch range, in both main phrase and tag. The target structures were Catalan sentences containing 8 to 11 instances of appositions, relatives, parenthesis, quotations, dislocations and vocatives, and 3 pairs of sentential and manner adverbs [see Appendix at the end of the paper]. If the pitch range of the tag remains about the same, as that of the main phrase increases, this would point to the independence of the tag.

In order to elicit the target utterances in three different pitch ranges the subject of the experiment was instructed to read the short text in which the tags were embedded 3 times in a natural way and without changes. She was asked to wear a set of headphones from the start. The first time she read the text without background noise. The second time, she was hearing real noise from the streets of Cambridge: works, traffic and people. The third time, the noise was set at an even higher volume. By having the speaker «compete» with different levels of background noise it was hoped to elicit distinct pitch ranges in a near-natural way.

Arguably, asking people to sound «detached», «involved», «angry» (as in the pioneering study by Liberman and Pierrehumbert 1984) adds unsolicited paralinguistic effects. We are not interested in that kind of variation. Nor do we want the type of variation obtained by imitating a professional phonetician reading at different pitch ranges. This is too controlled, as it already provides speakers with a model to imitate, therefore preventing us from observing the frequency and distri-

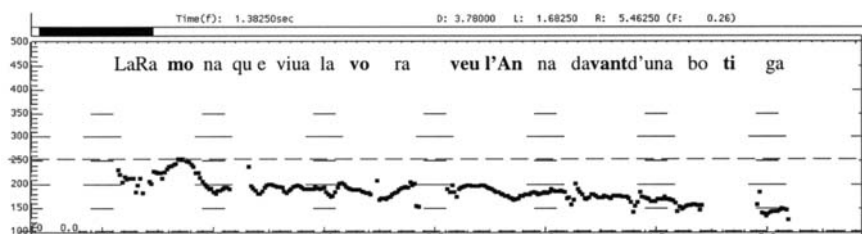
bution of actual occurring patterns. Rather, the objective was to obtain instances of the most commonly used intonational contours for every grammatical category, across a variety of texts with different metrical and segmental structures, and across the three noise conditions. The type of effect intended with these experimental conditions is what happens when someone raises her voice to be heard in noise or across a distance: the increase in voice volume induces a rise in F0. This is known as the «Lombard effect» (e.g. Lane & Tranel 1971, Junqua 1996).

#### 4. Phonological analysis

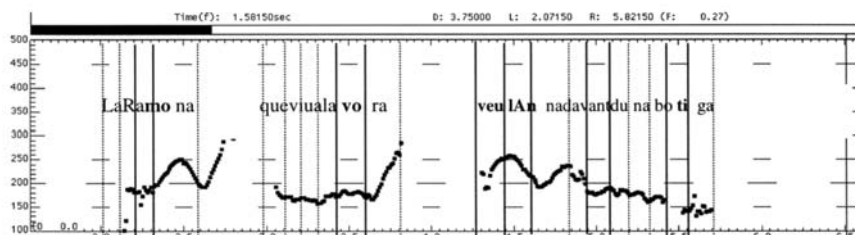
The elicitation method worked well. The speaker (MR, from Girona) produced the target sentences at the 3 different pitch ranges, as we will see in the examples below. As frequently occurs with Lombard speech, there were some instances of rephrasing, as the higher level of background noise involved a somewhat more deliberate, slower and overall more emphatic speaking style.

##### 4.1. Appositions and relatives

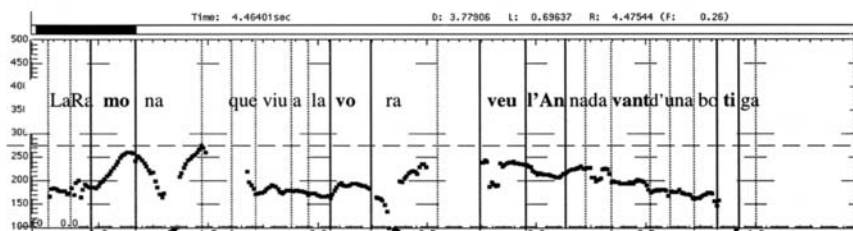
For instance, in Figures 2 to 4, we have the non-restrictive relative *La Ramona, que viu a la vora, veu l'Anna davant d'una botiga* 'Ramona, who lives nearby, meets Anna by a shop-window', uttered under the 3 progressively increasing noise conditions:



**Figure 2.** F0 contour of the utterance *La Ramona que viu a la vora, veu l'Anna davant d'una botiga*.



**Figure 3.** F0 contour of the utterance *La Ramona que viu a la vora, veu l'Anna davant d'una botiga*.



**Figure 4.** F0 contour of the utterance *La Ramona que viu a la vora, veu l'Anna davant d'una botiga*.

In Figure 2, we see that there is just one short pause, with a small rise, just after the relative clause. The first disruption of the pitch trace corresponds to the closure of the velar stop in *que*: it is not a pause. We see as well a little bump, on the stressed vowel of *VOr*a. In Figures 3 and 4, we observe, first, that there is a clear pause before the relative clause, as well as after. Second, the accents on *VOr*a are noticeably higher. Third, the starting point of the rise in the first peak, in *VOr*a, goes lower as pitch range increases (more evident in Figure 2 and 3, than in 3 and 4), suggesting the existence of a low tonal target. There would be two tonal targets associated to the stressed syllable, a low target at the onset and a high one at the offset, followed by a low phrase tone, and a high boundary tone. These tonal targets can be observed in other similar pre-nuclear accents, and would lend some support to the proposed notation (LH)\* for these other examples<sup>3</sup>.

Most of the times (66%), the tag has the same contour as the main phrase—in this case (LH)\* L- H%—but in a lower pitch level. I would argue that this is the distinctive trait of both non-restrictive or «appositive» relatives and of appositions, which show a congruence between prosodic form and grammatical function. Their prosody reflects both their dependency on and their independency from N, the noun phrase they are complementing. They do not belong to N as they are separated by phrase accents (20%) or pauses (80%). However, they are dependent on N: as non-restrictive (X'') complements, thus having a secondary status. This is shown by means of one of the possible subordinating strategies: reduplication, and by the use of a lower voice volume, and sometimes a lower pitch level. Appositions mostly behave in the same way as non-restrictive relatives. In Figures 5 and 6<sup>4</sup>, we have an example. It means *I'd buy there, in Bora Bora, an elegant vil.la*.

3. For reasons of space I just can sketch this proposal. The phonetic description matches that of prenuclear rises in Spanish (Prieto, van Santen & Hirschberg 1995), Greek (Arvaniti, Ladd & Mennen 1998), and Glasgow English (Cruttenden 1986; Ladd 1996). Previous studies on Catalan intonation have analyzed these rises as either H\* with variations in peak alignment (Prieto et al. 1995), L\* plus H word edge tone (Estebas 2000). For Spanish Sosa proposes L\*+H. Face argues for both L\*+H and H+L\*, while Hualde proposes (LH)\* (Face 2001: 225-226). (LH)\* was first proposed by Ladd and collaborators for Greek and English (Ladd 1996, Arvaniti, Ladd & Mennen 1998), indicating that both tones are associated with the stressed syllable though, none may be precisely aligned with it.
4. From now on, to save space, I will just compare two pitch ranges: normal to extra high, unless otherwise stated.

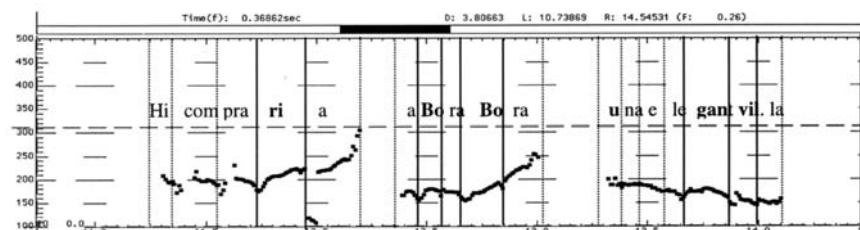


Figure 5. F0 contour of the utterance *Hi compraria, a Bora Bora, una elegant vil·la.*

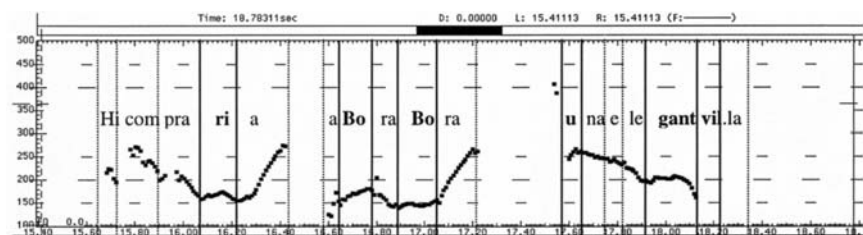


Figure 6. F0 contour of the utterance *Hi compraria, a Bora Bora, una elegant vil·la.*

To start with, they tend to be separated by clear pauses, as in the two examples above, though this is not by any means the only alternative. Tonal boundaries, and lengthening, accompanied by glottalization or laryngealization, are also possible. We see as well that there has been a change in the accentuation of the first clause. We could say that there is a steep rise all through the stressed syllable in *compraRia*, followed by a rise from this mid level. The contour on the tag matches this one, with a similarly steep rise, through the nuclear syllable, from onset to offset, and a similar rise from mid level. My proposed analysis would be:

- (1) *Hi compraria a Bora Bora*  
 (LH)\* H- 0% (LH)\* H- 0%.

In Figure 6 we find that the pitch starts high, and falls to the onset of the stressed syllable in *compraRia*, only to rise again, continuously to the end. In this example, the pitch falls again—which suggests a low phrase tone—and kicks up in a fairly steep final rise. In autosegmental metrical terms:

- (2) *Hi compraria a Bora Bora*  
 (LH)\* L- H% (LH)\* (LH)\* L- H%.

As we see, the tag copies part of the previous pattern, except that it starts with another onset-to-offset rise (the proposed (LH)\* accent) on the prenuclear peak, on *BOra*. The nucleus, on the second *BOra*, has a similar (LH)\* accent, followed by another low phrase tone and a high boundary tone.



Interestingly, as pitch range increases so do the accents in both main clause and tag. This means that they are similarly affected by external changes in the tonal space. If we add up the observation that the pitch span of the tag is not included within that of the main clause, we see that this behaviour doesn't readily agree with traditional accounts of tonal subordination such as Crystal's.

According to this theory of subordination, the one implicitly adopted by most researchers<sup>5</sup>, the first and foremost condition for a tone unit to be considered as subordinate to another is having a contour such that «though complete and independent within itself, should fall broadly within that of the superordinate unit». The second condition is that its nucleus follows the direction of the nucleus of the superordinate unit (Crystal & Quirk 1964: 52). Perfect reduplication, as in most of the examples, would be in agreement with this theory. The near equivalence in pitch range, certainly not. However, it is in line with Bonet's observations, as we have seen above: appositions copy the pattern of the main sentence, in the same pitch range, but in a lower tone of voice (Bonet 1984: 29, 43).

Appositions must be less loud than the main clause in order to be recognised as such. For instance, in the sentence: *I et vaig portar això, una bandana*, roughly, 'And I brought for you this thing, a bandana', the speaker produced a different kind of pattern, one with higher initial pitch in the «tag» than in the main phrase, and volume equally loud in both phrase and tag. This intonation shows that she was treating the supposed apposition as new information, the explanation of what «this thing», *això*, really is. And this behaviour gives us a clear indication of the main function of appositions, and by extension of non-restrictive relatives: adding something new to some piece of information already present in the discourse, the argument (or «theme», «focus», «topic») about what something («rheme», «proposition», or «comment»), is being said.

Similar observations have been made about the secondary status of adverbs, vocatives and direct speech markers, which «whether accented or not, represent afterthoughts, minor additions to the preceding part of the sentence» [...] «If they receive no pitch accent, the importance of the addition is less than if they receive a nucleus» (Cruttenden 1986: 76-77).

This secondary status should be matched by the appropriate low key intonation: less prominent (low tonal level and low voice) and in agreement with the nuclear pattern of the noun phrase they are complementing.

#### 4.2. Parentheses

In line with Payà (Payà 2002:560), in this study we find that parentheses are separated by clear pauses (80% of the cases) or, more rarely, by high tonal boundaries. They are accented, and generally, the whole parenthetical clause is uttered in a slightly lower pitch level. However there is one instance:

5. For instance, Beckman & Pierrehumbert, argued that the ip unit containing the post-posed tag has a pitch range subordinated to that of the main phrase, which would explain its apparent lack of accentuation (1986:298).

- (3) *Està molt clar, això és el drama, que ja no ens estimem de debò*  
 'It's pretty clear, this is the drama, that we don't love each other truly'

where the parenthesis sounds as loud as the main phrase, displays an overall higher pitch level, and there is tonal resetting at both the start of the parenthesis and the start of the second clause. Impressionistically, it sounds as if it is conveying the speaker's attitude in a rather emphatic way.

As we have seen above, Jackendoff proposes to treat parenthesis and adverbs in the same way, as verb complements. Take for instance the following example, from my data:

- (4) *I es va gastar els diners —amb gran alegria— fent un viatge a una illa tropical*  
 'And she spent all the money —with great joy— in a trip to a tropical island'

In this sentence, the parenthesis «with great joy», would be the equivalent of an adverb of manner, as for instance «liberally» or «happily»: «It was with great joy that she spent all the money in a trip to a tropical island». It receives a «proper» parenthetical intonation: less prominent than that of the main phrase. Conversely, in the other case, *això és el drama* ('this is the drama') could be interpreted as a sentence adverb, a V''' complement, as it merely conveys the speaker attitude. The main intonational differences between the two types of adverbs will be discussed in the last section, and we will check whether this dichotomy between V''' and V''' type holds for them as well.

Interestingly, there were 5 cases of parenthetical adverbial phrases which the speaker didn't read at all, as for instance in *ensenyant-li el lloro* 'showing her the parrot', or *rient com una boja* 'laughing like mad'. Those can be considered as reduced quotation-markers, and as such, a sort of metalinguistic comment, as we saw above. That is, «laughing like mad» can be reasonably interpreted as a reduced version of «she said laughing like mad», etc. In the last case, the speaker read the text in a laughing way. She understood the parenthesis in a true metalinguistic sense. She interpreted them as a sort of off-the-record stage directions, addressed to the reader, for her to know how to enact the dialogue, but not meant for the audience.

We can safely argue that this type of parenthesis, this «reduced quotation», is typical of written language and is oriented to the reader. It indicates how the reader should read the text. We could say that it is «metalingual», in the broad sense that we have seen, though is not directed by the speaker to the listener, but by the writer to the reader. Let's look in more detail at quotations to see if they bear out these expectations.

#### 4.3. Quotations

Quotations, like adverbs, have been treated to some extent in English (Pierrehumbert 1980, Ladd 1980, 1996, Gussenhoven 1986, Bing 1984, Cruttenden 1986) while they have received practically no attention in Catalan. Bonet (1984) does not even

mention them in her typology of «constituents externs». Prieto (2002: 36) considers them a type of parenthesis, regardless of phrasal position. Prosodically, there would be a difference: while in middle position the tag ends in a final rise, in final position it ends in a fall, and the overall tone is much lower, as in her example, *La nena no vol res, va dir la mare* ‘The girl doesn’t want anything, the mother said’ (Figure 7).

I would argue that the final rise is entirely optional, though it tends to occur in middle position while it seldom does in final position. However, we can find perfectly formed sequences without this rise, as in Figure 8. It corresponds to the sentence «Away, Anna replies, as far away from my husband, Norman, as possible», in the high volume version:

We can appreciate that the quotation is uttered in a completely flat, deaccented-like tone. Impressionistically, there is not a major prosodic boundary between the first clause and the tag, nor between that and the second clause. The break in the contour correspond to the offset of voicing associated with the closure of the [t] in «tan». However, there is some amount of pre-boundary lengthening on the last syllable of «Anna». At the same time, the pitch is low and flat for the whole clause. As Prieto notes, what is more perceptually relevant is this contrast between the prominent stretches on both sides and the nearly deaccented parenthesis. This is achieved by means of the radical lowering of the tone and voice volume for this clause only, with subsequent resetting for the next.

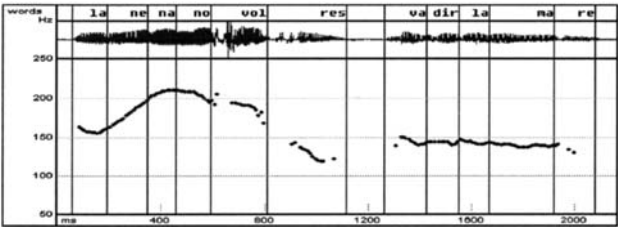


Figure 7. Waveform and F0 contour of the utterance *La nena no vol res, va dir la mare*.

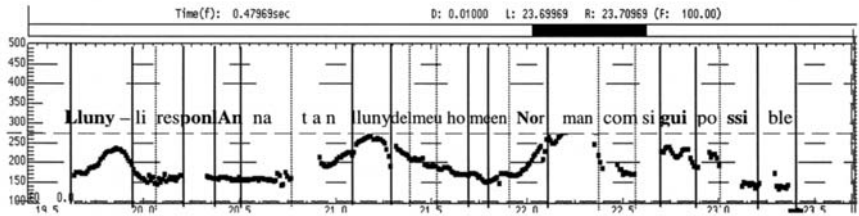


Figure 8. F0 contour of the utterance *Lluny, li respon l'Anna, tan lluny del meu home, en Norman, com sigui possible*.

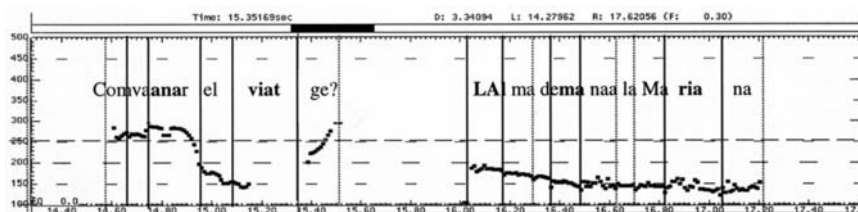


Figure 9. F0 contour of the utterances *Com va anar el viatge? L'Alma demanà la Mariana.*

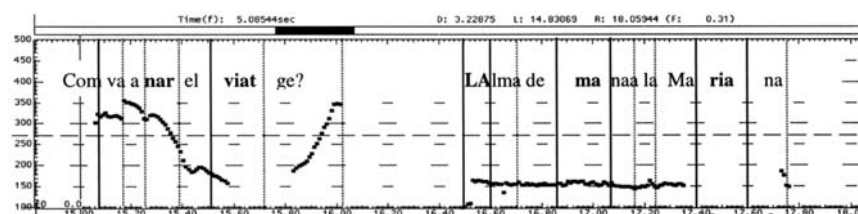


Figure 10. F0 contour of the utterances *Com va anar el viatge? L'Alma demanà la Mariana.*

This monotone is the default intonation for this group of elements. We find it in all instances of quotation, independently of whether they follow a question ending in a final rise, or a statement with a falling ending. For instance, in Figure 9 and 10, we have the phrase «How was your trip, Alma asks Mariana», in the normal and higher pitch range.

Comparing Figure 9 to Figure 10, we see that there has been an increase of about 50hz in the scaling of both the initial peak and the final low. Apparently, this increase in pitch span has not affected the post-sentential tag. This remains flat and level, even across the clear pause.

We find the same effect after a falling ending, as we already saw in Figure 8, in the quotation *Anna says*.

#### 4.4. Adverbs

Sentence adverbs, another type of non-restrictive complement (V''' in this case), appear to be prosodically different from the other three types; at least those in phrase final position in my data. Let's look for instance at Figure 11 and Figure 12, the pitch traces for the potentially ambiguous sentences *No saben parlar normalment* and *No saben parlar*, *normalment* meaning 'They can't speak, normally' (generally) versus 'They can't speak normally' (in a normal, or civilized way).

The sentence in Figure 11 is a remark about some unruly children, who are always shouting, and therefore, *They can't speak normally*. We see that there is one single tone unit, without any detectable prosodic break, neither perceptually nor acoustically. Figure 12, is a comment about the «parrot» which the speaker in

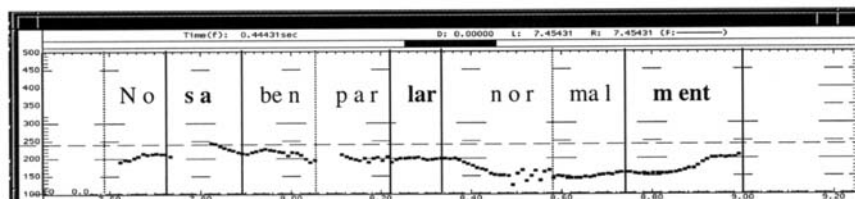


Figure 11. F0 contour of the utterance *No saben parlar normalment*.

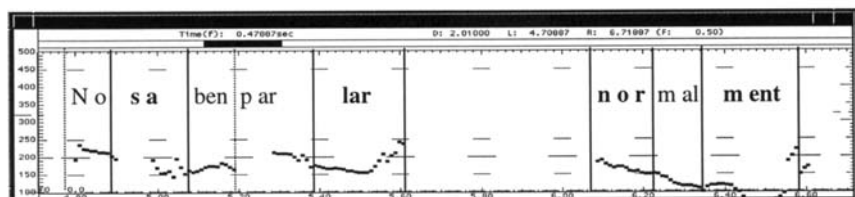


Figure 12. F0 contour of the utterance *No saben parlar, normalment*.

the story has been training for a time, without success, as it turns out to be an owl, and owls *They can't speak, normally*. In contrast, here, the adverb is separated from the main phrase by a clear pause, accompanied by a sizeable amount of tonal resetting (the phrase ends at about 155 Hz and the adverb start at 200 Hz, that is roughly a 45 Hz step). Impressionistically, this sentence has an ironic load, reinforced by the comparatively long pause. Other adverbials (*honradament* 'honestly', *de debò* 'truly', *finalment*, 'finally', *naturalment*, 'naturally') show the same tendency to reset the pitch range for the adverb, when there is a clear pause (74% of the time). If we listen just to the main sentence, this sounds as perfectly formed and completed. The adverb is truly external and accessory to the phrase.

We can find as well cases separated by high boundary tones instead of pauses, as for instance in the extra high volume version of the sentence, in Figure 12. Those with a pause and tonal resetting sound more emphatic, more involved, that is, as if conveying the speaker's attitude towards what she asserts in the proposition in a more forceful way. Conversely, the one instance of main phrase ending with a rise from mid level, in version 1 of *Ja no ens estimem, de debò*, 'We don't love each other anymore, truly', sounds curiously detached, as if the speaker was thinking «so it's life, what can we do?». In contrast, the two other versions of the same sentence sound positively and properly sad.

In consequence, I would argue that for an adverb to function as a sentence adverb it must be separated by a tonal break, or, more frequently, by a pause (2:1) followed by tonal resetting. It sounds accented and prominent. When it works as a manner adverb, as in the counterparts of the sentences we have just seen, it tends to belong to the same tonal unit, with no prosodic break, and a non-prominent into-

nation. Curiously, it is in just the opposite case, when the adverb is a «tag», a «sentence external element», that it receives the more independent, non-tonally subordinated intonation. This corroborates our initial observation about the behaviour of parenthesis, which suggested two types: those similar to sentence adverbs and the rest. This behaviour would lend support to Jackendoff's analysis of parenthesis as a type of adverb.

I would argue that sentence adverbs in Catalan shouldn't be considered alongside other elements. They are probably the only true case of «sentence external element», understood in the canonical way of being both syntactically and prosodically independent. This apparent contradiction, that V''' complements should have a more prominent intonation than V'' complements, is in line with the behaviour of adverbs. As we have seen, V''' or sentence adverbs show no traces of tonal subordination while adverbs of manner, the V'' type, which syntactically have a higher status, are tonally subordinated to the verb phrase. They are in the same unit, focused, as part of the focus-unit of the verb, though they may receive no accentuation at all, as in the examples in the data. This is in line with Cruttenden's observations for English, as we have seen above.

How can this be explained? Preliminarily, building on Cruttenden's proposal, I would venture that V''' adverbs, and the equivalent parenthetical remarks, have a higher pragmatic force than their V'' counterparts as they convey the speaker attitude and beliefs towards what is being asserted in the main proposition, in such a way that it makes the right effect upon the hearer. From this point of view, their functional status is far from being secondary, and this is adequately matched by their prosody.

## 5. Conclusions

Relatives, appositions, and quotations as well, appear to show a remarkable congruence of prosodic form and grammatical function. Both relatives and appositions are N''' complements and show the combination of prosodic independency (separated by lengthening, tonal boundaries or pauses) and dependency (subordinated to main phrase by means of reduplicating its contour, in a lower voice) that was expected.

Quotations are even less important than relatives and appositions. They may be analysed as «metalinguistic», in the sense of being external to the text. Their pronunciation both reflects their independence from the surrounding text (separated by pauses) and their marginal status in the discourse structure (no accentuation at all).

Parenthesis can be provisionally analysed as falling into 3 groups. The first sub-set, the («said laughingly») type, would have even less pragmatic value than a quotation attribution. Accordingly, speakers may interpret them as mere directions about how to read the text. The two other groups would be equivalent to adverbs: to V'' or general adverbs (like «with great joy») and to V''' or sentential adverbs (as in «this is the drama»). Both constitute separate tonal units. The first type, though, would receive the subdued intonation (lower pitch level, no tonal resetting) that

has traditionally been associated with parenthetical intonation. The second type, the one arguably equivalent to V''' adverbs, would receive a more prominent intonation: louder, and with an overall higher pitch level.

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## Appendix

The target structures vary in segmental and metrical structure. They were embedded in a short text, consisting of 4 parts. Each part is an imaginary dialogue between two friends that meet up in the street and engage in small talk. The topics are holidays and relationships.

### Appositions

1. Tan lluny del meu home, *el Norman*, com sigui possible.
2. Molt millor que es quedin amb son pare, *el Norman*.
- 3,4. El Norman, *l'home de l'Anna*, troba un amic, *el Ron*.
5. Però per què no aneu a veure un advocat i poseu fi a aquesta situació, *al drama*?
- 6,7. Tenia malària, *malària de debò*, i la vam haver de deixar allà, *a Angola*.
8. Però em pensava que tenia un altre problema, *nagana*.
9. Això t'ho he portat per a tu, *una bandana*.
10. Això és pel teu home, *una daga*.
11. El Manu, a qui realment li agrada jugar, estava mirant la loteria quan va passar el Norman, *l'home de l'Anna*.

### Relatives

1. La Ramona, *que viu a la vora*, veu l'Anna davant d'una botiga.
2. L'Anna, *que no és mala dona*, i jo, ens barallem sempre.
3. Mon padrí, *que era el bisbe de Novara*, m'ho deia sempre.



4. Al mercat, *a on a l'Alma li agrada d'anar*, es troba a la Mariana.
5. Una de les noies, *que es diu Norma*, és va posar malalta.
6. Trucaré al Manu, *amb qui l'Anna es va jugar diners a Angola*, I li diré que ha perdut l'aposta.
7. El Manu, *a qui realment li agrada jugar, estava mirant la loteria*, quan va passar el Norman, l'home de l'Anna.
8. I m'aniria a Bora Bora, *a on l'Anna va anar*, però jo m'estaria allà per sempre.

### Parentheses

1. Ja he fet un creuer pel Morava (*diria que era el Morava*) així que aquest cop faria un creuer pel Volga.
2. Està molt clar, *això és el drama*, que ja no ens estimem de debò.
4. T'has d'estar al llit, *això és un dogma*, quan tens la malària.
5. Més aviat no (*rient com una boja*) només el bestiar n'agafa, de nagana.
6. Això és pel teu home, una daga (*donant-li la daga*).
7. I li he portat aquest de la foto (*ensenyant-li el lloro*).
8. T'han enganyat! (*rient-se de la Mariana*) «però encara no ha xerrat gens..»
9. Ja veig...(*rient igualment*).
10. I es va gastar els diners, *amb gran alegria*, fent un viatge a una illa tropical.

### Quotations

1. *La Ramona diu*- A on vas de vacances enguany, Anna?
2. *La Ramona fa adéu amb la mà i diu*: - que t'ho passis molt bé, Anna!
3. Lluny - *li respon l'Anna*- tan lluny del meu home, en Norman, com sigui possible.
4. Anna, que us heu separat tu i el Norman? – *La Ramona la interroga*.
5. No ens estimem, de debò –*murmura l'Anna*.
6. I els nens, que aniran també? –*diu la Ramona, canviant de tema...*
7. Però, per què no aneu a veure un advocat i poseu fi a aquesta situació, al drama? – *el Ron insisteix*.
8. Com va anar el viatge? –*l'Alma demana a la Mariana*.
9. Excel·lent! –*diu la Mariana*.

### Adverbs

- 1.a. No, no puc prendre els nens amb mi. *No saben comportar-se, honradament*.
- 1.b. No me'n refio dels advocats. *No saben comportar-se honradament*.
- 2.a. Els mussols no parlen. *No saben parlar, normalment*.
- 2.b. Sempre criden i es barallen. *No saben parlar normalment*.
- 3.a. Però t'asseguro que ja s'ha acabat tot. *No ens estimem, de debò*.
- 3.b. Està molt clar, això és el drama, que *ja no ens estimem de debò*.
4. L'Anna va guanyar el Manu, *finalment*.